Impact of Religious Affiliation on Economic Growth in Sub-Saharan Africa

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This paper is about the relationship between religious affiliation and economic performance in Sub-Saharan Africa. This relationship has become the focus of a growing amount of literature worldwide but is unique to Sub-Saharan Africa because of widespread poverty in the region, which experienced changes in religious affiliation early in the 20th century. Poverty coincides with slow economic growth in many, but not all, countries in Sub-Saharan Africa. Multiple regression analysis is used to test the hypotheses about the impact of religious affiliation on economic growth for a cross section of Sub-Saharan nations, using data from 2010. The dataset has various economic growth indicators including the variable of interest, religious affiliation, which is measured in terms of segments of the population practicing Christianity or Islam. The regression analysis is used to test the null hypothesis that religious affiliation has no impact on economic performance. Preliminary findings based upon the regression analysis indicate that the null hypothesis cannot be rejected and religious affiliation does not have an impact on economic performance in Sub-Saharan Africa for 2010.

Introduction

Culture is a social factor that is thought to influence economic growth. It affects personal traits such as honesty, thrift, willingness to work hard, and openness to strangers which in turn influences one's economic decision making and thus economic outcomes (Barro).

Religion is an important part of culture. The study of religion's effects on economic growth began in early part of the 20th century, when Weber argued that elements of Protestant theology created a better environment for the development of capitalism, which in turn led to more rapid development (Hayward). However, this topic of religion's impact on economic growth lay mostly dormant until recent. Grier continued this research in 1997 by analyzing the colonies of strongly Protestant and Catholic countries. The results showed that economic growth was more dependent on the colonizing country than the religious affiliation of the country (Grier). Other investigators contend that religious affiliation indeed affects economic growth (Noland). While Noland was unable to find robust results with respect to particular religions, he argued that Islam promoted growth. Continued research has found that religious beliefs have a positive affect while church attendance has a negative affect with respect to economic growth (Barro).

While these studies provide a basic foundation for understanding religion's effects on economic growth, there is limited literature specifically focusing on this relationship in Africa. Africa continues to have a high level of poverty, with famine threatening millions. It was thought that Africa would overcome this problem through sustained economic growth following the independence of many countries in the 1950s and 1960s (Naudè). It was the belief that

poorer countries would converge in per capita income with the richer countries (Naudè). However, most African countries have actually fallen behind the rest of the world.

Naudè's research focused on how geographical and institutional factors affected economic growth. Naudè found nine indicators which significantly impacted growth in Africa. However, the research did not include religion. The purpose of this paper is to fill the gap in the analysis of Africa's economic growth by introducing religion. This paper looks to contribute to the understanding of the poor economic growth in Africa and the continent's lack of convergence with more advanced countries. The null hypothesis is that religion has no effect on economic growth in Africa. The study also looks to investigate the difference in GDP per capita in countries based upon Christian and Islamic affiliation.

Since religion is a part of the culture, it likely has an effect upon the economic development of a country. For instance, faith based organizations are estimated to provide 30-70% of the health infrastructure in Africa (Karpf). Africans also place more trust in religious organizations (76%) than any other institution according to a survey questioning the confidence people have in eight different social or political institutions throughout 19 Sub-Saharan African countries (Tortora). Throughout many countries in Sub-Saharan African, roughly nine in ten people say that religion is very important to their lives (Pew Forum). All of this shows that faith-based organizations provide a lot of assistance to Africans who not only trust them but also highly value religion.

Data on Religiosity

A cross section of data measuring economic, social, and religious factors was collected for forty four countries in Sub-Saharan Africa for 2010. These forty four countries, shown in Table 1, were selected because they contained complete and accurate data for all of the variables under review. 2010 was selected because it was a recent year, which makes the results relevant as well as containing more complete data because of more thorough record keeping in Africa. The dependent and independent variables were selected based upon a review of relevant research. These variables were from the World Bank, CIA Worldfactbook, and the World Christian Encyclopedia, which provides some of the most up to date data on religious affiliation. One of these variables, literacy rates, is from the CIA Worldfactbook and has data from corresponding years other than 2010. However, it is assumed that this variable changes slowly over time and is thus appropriate for this research. The religious variables, Christian and Muslim religious affiliation, are from 2000, but thought to be slow changing measures and thus appropriate as well. The dependent variable for the regression is GDP per capita in 2010 and the variables of interest are religious affiliation as a percentage of the population for Christian and Muslim. The remaining four independent variables along with explanations are displayed in Exhibit 1. The descriptive statistics for the variables are shown in Table 2.

Following the example of Noland, two different regressions were performed and used as a way to display the robustness of the model. The first regression, seen in Table 3.1, did not include religious affiliation and was used as a way of creating a standard model based upon economic fundamentals. The second regression, seen in Table 3.2, includes the variables of Christian and Muslim affiliation as a percentage of the population. A 90% and 95% significance level was used to test the significance of regression coefficients.

While using OLS for the regression, we assume that the errors are distributed randomly. However, this regression model likely displays a non-random distribution of the errors. This is affected by one or more of the right side variables which may be autocorrelated.

Cross Section Findings on Religiosity

Table 3 displays the findings from the first and second regressions. The percentage of the population that is literate is statically significant at the 5% level for both regressions. Literacy also displays a positive coefficient, which means that the higher the literacy the higher the GDP per capita. Urban population as a percentage of the total population is significant in both regressions at the 5% level. It also displays a positive sign which is concurrent with the explanation of the variable. Trade Intensity Volume is also significant and positive at the 5% level in both regressions. Both regressions show that the literacy rate, urban population, and trade intensity are significant in explaining GDP per capita.

Inflation of consumer prices is insignificant in both of the regression models. However, it is not far from being significant at the 10% level. Both regressions also show a negative sign which is in agreement with the explanation that inflation is harmful for economic growth.

Christian and Muslim religious affiliation are both highly insignificant in regression 3.2. These results may signify that there is little difference between economic growth in highly Christian and highly Muslim populations and thus they cancel each other out. These two religions make up about 90% of religious beliefs in Africa with the other 10% distributed among several other religions. While other religions may be statistically significant in predicting economic growth, they would have a much smaller effect upon Africa's overall economic growth.

These results also fail to back up the argument that religious and faith-based organizations support economic growth because of the great deal of infrastructure and confidence they provide for African communities. These results may be the byproduct of religious conflict that occurs in Africa between these two religions. For instance, a survey of 19 Sub-Saharan Africa countries found that a substantial amount of Africans think religious conflict is a very big problem in their country (Pew Forum). The median for all the countries is 28% and reaches as high as 58% of the population in Nigeria and Rwanda which think religious conflict is a very big problem (Pew Forum). Religious conflict is not supportive of economic growth and could definitely prevent a proper and stable environment conducive for economic development from forming.

Conclusions

This research contributes to the economic development literature by focusing on a more recently studied topic: religion's impact on economic growth, specifically in Africa. This focus allowed the research to attempt to better understand why much of Africa has had such disappointing economic growth results. It also provides a basic understanding of economic development with respect to Africa and the significant variables affecting growth. This basic understanding can be the foundation for further research into this area.

Further research could look to overcome several of the barriers that this research encountered. For instance, it contained a small sample size, 44 samples and 37 degrees of freedom, as well as analysis of a single year. The small sample size results in lower certainty and the single year of analysis does not account for yearly variation which could result from things such as natural disasters or economic downturns. A single year also does not allow for an

analysis of the growth in GDP per capita with respect to the growth in religious affiliation. It is simply a snap shot of Sub-Saharan Africa for a single year.

Additional research could solve both of these problems by collecting a panel data set for all of the variables over time and country. This would increase the sample size because the regression would have more observations as well as accounting for yearly variation. One significant issue that this research in fact encountered was trying to compile complete and accurate data over multiple years for each country. That is the main reason why this research focused on a specific year. A panel data set would require thorough investigation of multiple data sources and may in fact not be possible depending on how far back it goes. There is simply a lack of quality data for much of Africa's past. Another form of research could focus on the religiosity indicators. For example, religious affiliation is not the best indicator of strong religious beliefs which could influence behavior and a culture. The example of Barro could be followed and variables measuring religious beliefs and church attendance could be used as religious indicators. The World Values Survey releases information with these kind of measures. However, again Africa may not be completely surveyed and may lack complete data. So, both of these forms of further research will require deeper investigation of data sources and potentially even conducting surveys to collect additional data.

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Appendix:

Table 1

Countries included in Regressions 3.1 and 3.2

Angola	Liberia
Benin	Madagascar
Botswana	Malawi
Burkina Faso	Mali
Burundi	Mauritania
Cabo Verde	Mauritius
Cameroon	Mozambique
Central African Republic	Namibia
Chad	Niger
Comoros	Nigeria
Congo, Dem. Rep.	Rwanda
Congo, Rep.	Sao Tome and Principe
Cote d'Ivoire	Senegal
Equatorial Guinea	Seychelles
Ethiopia	Sierra Leone
Gabon	South Africa
Gambia, The	Sudan
Ghana	Swaziland
Guinea	Tanzania
Guinea-Bissau	Togo
Kenya	Uganda
Lesotho	Zambia

Exhibit 1

Regression Variables and Explanations

Independent Variable: GDP per capita (2010)

Dependent Variables:

1) Literacy (% of population that is literate): Education variables display the investment into human capital which in turn increases economic productivity (Naudè).

2) Urban Population (% of total population): Higher urbanization is associated with better networks, learning by doing, scale economies, and better political outcomes (Naudè).

3) Trade Intensity Volume (Export Volume Index + Import Volume Index): Leads to a reallocation of factors of production according to comparative advantage which increases productivity (Naudè).

4) Inflation, consumer prices (annual %): The more inflation, the more uncertainty, which in turn discourages private investment and productivity (Iyoha).

5) Christian Affiliation (% of population): This is a percentage of the total population in each country that is considered Christian.

6) Muslim Affiliation (% of population): This is a percentage of the total population in each country that is considered Muslim.

Table 2

Descriptive Statistics

	GDP per capita (current US$)	Trade Intensity (Volume)	Inflation, consumer prices (annual %)	Urban population (% of total)	Literacy (% of Population Literacy)	Christian	Muslim
Average	2309	485	7.4%	39.2%	65.9%	56.4%	27.9%
Median	852	405	4.5%	38.8%	67.5%	61.7%	17.0%
St. Dev.	3513	321	12.9%	16.3%	18.6%	35.4%	32.8%
Min.	211	96	-2.4%	10.6%	28.7%	0.2%	0.0%
Max.	17613	1976	85.1%	85.8%	94.2%	98.0%	99.6%

Table 3

Economic and Religious Variables

Independent Variables	Dependent Variables	
	3.1	**3.2**
	GDP per capita	GDP per capita
Literacy (% of population)	10534.7	11229.2
	(2236.19)*	(3086.29)*
Urban Population (% of total)	66.2	65.1
	(25.51)*	(26.29)*
Trade Intensity Volume	3.3	3.2
	(1.29)*	(1.32)*
Inflation, consumer prices (annual %)	-49.5	-46.8
	(31.19)	(32.72)
Christian (% of population)		-1105.6
		(2906.96)
Muslim (% of population)		-690.7
		(2896.85)
Constant	-8446.8	-8056.1
	(1814.63)	(2988.24)
R^2	51.42%	51.64%
Number of Observations	44	44

Standard Errors are shown in parenthesis

* Significant at the 5% level

** Significant at the 10% level